# DUAL SPRING RATE PRELOAD MODULE WITH AIR ADJUSTMENT

## ABSTRACT OF THE DISCLOSURE

A preload shock absorber assembly includes a shock absorber having a hydraulic cylinder. The cylinder includes a rod slideably supported by a cylinder head having a seal at one end of the hydraulic cylinder. A preload air chamber is arranged radially outwardly of the rod seal to provide a first spring having a first spring rate. The pressurized preload air chamber is separated from the rod seal to prevent loss of pressurized from the preload air chamber to the hydraulic cylinder. The pressurized air chamber uses a movable separator that seals the air chamber and isolates the air chamber from the outside environment. A second spring is supported by a seat secured to the hydraulic cylinder outer wall and is arranged between the seat and the separator. A third spring is arranged within the air chamber to supplement the spring rate provided by the pressurized air chamber.

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